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Evaluation of the diet in Danish adults using a diet quality index

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AIM

The aim of the present study was to describe the habitual diet in Danish adults, and to evaluate the overall quality of the diet using a diet quality index based on the National Food-Based Dietary Guidelines (FBDG), which include seven guidelines regarding diet and one regarding physical activity.

METHODS

Data from the Danish National Survey of Diet and Physical Activity 2003-08, including 3,354 individuals aged 18-75 years were used. The diet quality index was constructed based on six foods and nutrients (see below); a score for each of the six components was calculated as the ratio between actual intake and the recommended intake, e.g. If an individual eats 500 g fruit and vegetables per day, the score is $500/600=0.83$. The scores were in the range from 0 to 1 with zero assigned to an intake most far from the guideline, and 1 complying with the guidelines. The scores for each food/nutrient were summed. Individuals were divided into groups according to quartiles of the diet quality index, and food and nutrient intakes were evaluated in each of the four groups.

Food -based dietary guidelines included in the diet quality index

Dietary guideline	Food/nutrient included in index
• Eat less fat – particularly fats from meat and dairy products	→ Max 30 E% from total fat, and max 10 E% from saturated fat
• Eat potatoes, rice or pasta and wholemeal bread – every day	→ Min 500 g/day
• Eat fruit and vegetables every day – 6 portions/pieces per day	→ Min 600 g fruits and vegetables/day
• Fish and fish products several times a week	→ Min 200 g fish/week
• Limit intake of sugar – particularly from soft drinks, confectionary and cakes	→ Max 10 E% from added sugar

Table 2. Food intake in four groups of diet quality index

	1 st Quartile		2 nd Quartile		3 rd Quartile		4 th Quartile		P for trend
	Median	IQ range	Median	IQ range	Median	IQ range	Median	IQ range	
High-fat dairy	21	6:44	19	7:38	15	5:33	11	3:26	<.0001
Low-fat dairy	20	0:82	40	2:125	50	5:143	75	13:150	<.0001
Processed meat	31	15:53	23	12:41	18	9:31	13	6:26	<.0001
Fish	5	0:13	13	5:27	20	9:35	29	18:41	<.0001
Poultry	15	1:36	18	3:36	19	4:37	20	4:37	0.0206
Fats	45	32:66	35	25:48	29	19:38	21	14:29	<.0001
Rye bread	49	25:81	56	31:89	56	31:93	65	39:97	<.0001
White bread	60	34:87	45	26:73	43	21:64	30	13:51	<.0001
Fruit	91	40:159	152	82:247	211	125:320	282	191:410	<.0001
Vegetables	109	72:157	131	92:186	152	109:213	181	129:255	<.0001
Juice	0	0:51	26	0:103	26	0:129	26	0:129	<.0001
Potatoes	90	49:148	90	47:140	79	35:124	87	46:139	0.0148
Cake etc.	53	26:91	48	21:78	39	18:71	32	14:57	<.0001

A high intake of high-fat milk products, fat on bread and processed meat contributed to a high intake of total fat and saturated fat. Likewise sugar-sweetened soft drinks contributed to a high intake of added sugars in the group with the lowest value of the diet quality index. Individuals with values above the highest quartile had higher intakes of “healthy foods” such as fish, fruit and vegetables, rye bread. Overall, intakes of micronutrients were sufficient in all ranges of the index, except from vitamin D, and iron in women

CONCLUSION

The diet quality index is a useful tool in assessing food and nutrient intake in individuals with high vs. low degree of compliance towards the dietary guidelines, and provides a valuable tool in future studies investigating variations in dietary intakes in relation to lifestyle, demographic and regional differences in Denmark.

RESULTS

Macronutrients distribution did not meet recommendations, as energy from total fat and especially saturated fat was too high in all groups.

Table 1. Total score and macro nutrients in four groups of diet quality index

	1 st Quartile		2 nd Quartile		3 rd Quartile		4 th Quartile		P for trend
	Mean	Std	Mean	Std	Mean	Std	Mean	Std	
Total score	2.8	0.4	3.8	0.2	4.4	0.2	5.2	0.3	<.0001
Energy, MJ/day	10.3	3.2	9.3	2.7	8.8	2.4	8.0	2.3	<.0001
Fat (E%)	39	6	36	5	34	4	30	4	<.0001
Saturated fat (E%)	17	3	16	2	14	2	12	2	<.0001
Monounsaturated fat (E%)	14	2	13	2	12	2	11	2	<.0001
Polyunsaturated fat (E%)	5	1	5	1	5	1	5	1	0.1153
Carbohydrate (E%)	47	6	48	5	50	5	53	4	<.0001
Added sugar (E%)	13	7	10	5	8	4	7	3	<.0001
Dietary fibre (g/MJ)	2	0	2	0	3	1	3	1	<.0001
Protein (E%)	14	2	15	2	16	2	16	2	<.0001